The CHEMIST

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

EDWARD L. GORDY, *Editor*, 233 Broadway, New York City

VOLUME X DECEMBER, 1933 NUMBER 9

TABLE OF CONTENTS

	Page
Code for Chemists	325
Cooperation with the NRA	333
Codes and the Employee Chemist. BENJAMIN JANER	335
Unemployment Committee. M. R. BHAGWAT	337
Technical Service Committee. HOWARD STOERTZ	339
Contracts. A Symposium of the Niagara Chapter	343
Pharmaceutical Research. A. RICHARD BLISS, JR.	347
By-products	349
Book Reviews	352
Institute Notes	354
News	357

Entered as second-class matter February 28, 1930, at the Post Office at Easton, Pa., under act of August 24, 1912.

Issued monthly except in June, July and August at 20th and Northampton Sts., Easton, Pa. Subscription price, $2.00 a year. Single copy, 25 cents.

Copyright, 1933, by The American Institute of Chemists, Inc.

Editorial Advisory Board

M. L. CROSSLEY, *Chief Chemist*, Calco Chemical Co., Bound Brook, New Jersey.

RUSSELL C. ERB, *Professor*, Philadelphia College of Osteopathy, Philadelphia, Pa.

HOWARD S. NEIMAN, *Patent Attorney; Editor*, TEXTILE COLORIST, 233 Broadway, New York, N. Y.

JAMES W. H. RANDALL, *Consulting Chemist*, 50 East 41st Street, New York, N. Y.

FLORENCE E. WALL, *Research Writer; Technical Publicity*, 235 East 22nd Street, New York, N. Y.

FREDERICK W. ZONS, *Consulting Chemical Engineer*, 239 Centre Street, New York, N. Y.

Contributing Editors

JEROME ALEXANDER, *Consulting Chemist*, 50 East 41st Street, New York, N. Y.

WALTER J. BAÑZA, *Industrial Consultant*, Chanin Building, 122 East 42nd Street, New York, N. Y.

ROSS A. BAKER, *Professor of Chemistry*, College of the City of New York, 17 Lexington Ave., New York, N. Y.

D. D. BEROLZHEIMER, *Chemical Literature Expert*, 50 East 41st Street, New York, N. Y.

A. RICHARD BLISS, JR., *Director, Research Laboratories*, William A. Webster Co., Memphis, Tenn.

HENRY D. BODDINGTON, *Consulting and Technical Chemist*, 2541 Grand Avenue, Huntington Park, Calif.

JAMES F. COUCH, *Research Chemist*, Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

M. L. CROSSLEY, *Chief Chemist*, Calco Chemical Company, Bound Brook, N. J.

LLOYD L. DAVIS, *Supervisor*, Process Division, Continental Oil Co., Ponca City, Oklahoma.

ROY B. DAVIS, *Professor of Chemistry*, University of the South, Sewanee, Tennessee.

LOUIS M. DRAKE, *Private Scientific Research*, Laboratory of L. M. Drake, Daytona Beach, Florida.

WILLIAM C. DUMAS, *Owner*, The Dumas Laboratories, Atlanta, Georgia.

WILLIAM FOSTER, *Professor of Chemistry*, Princeton University, Princeton, N. J.

PHILIP P. GRAY, *Director*, Department of Chemistry, Pease Laboratories, 39 West 38th Street, New York, N. Y.

ALBERT H. GRIMSHAW, *Associate Professor, Chemistry and Dyeing*, North Carolina State College, Raleigh, N. C.

WILLIAM A. HAMOR, *Assistant Director*, Mellon Institute of Industrial Research, Pittsburgh, Pa.

HENRY R. HENZE, *Professor of Pharmaceutical Chemistry*, University of Texas, Austin, Texas.

KARL M. HERSTEIN, *Consulting Chemist*, 227 Front Street, New York, N. Y.

CHANDLER D. INGERSOLL, *Industrial Chemist*, 33 Spruce Street, New York, N. Y.

KIRBY ERROLL JACKSON, 820 18th Avenue South, Nashville, Tenn.

Contributing Editors (Continued)

ERNEST G. JARVIS, *President*, Niagara Falls Smelting & Refining Company, Niagara Falls, N. Y.

MARTIN KILPATRICK, JR., *Assistant Professor of Chemistry*, University of Pennsylvania, Philadelphia, Pa.

CHARLES A. KRAUS, *Research Professor of Chemistry*, Brown University, Providence, Rhode Island.

J. M. F. LEAPER, Oreland, Pa.

ALAN PORTER LEE, *Chemical Engineer*, 136 Liberty Street, New York, N. Y.

STEWART J. LLOYD, *Dean*, School of Chemistry, Metallurgy, and Ceramics, University of Alabama, Alabama.

W. C. MACTAVISH, *Professor of Chemistry*, New York University, New York, N. Y.

ALEXANDER H. MCDOWELL, 5034 Maple Street, Dearborn, Mich.

J. S. MCHARGUE, *Acting Head of Department of Chemistry*, Kentucky Agricultural Experiment Station, Lexington, Ky.

ROBERT J. MOORE, *Development Manager*, Varnish Resin Department, Bakelite Corporation, 230 Grove Street, Bloomfield, N. J.

D. P. MORGAN, *Commercial Research*, Scudder, Stevens, and Clark, 1 Wall Street, New York, N. Y.

CHARLES E. MULLIN, *Consulting Chemist*, 1023 Mifflin Street, Huntington, Pa.

M. STARR NICHOLS, *Assistant Professor of Sanitary Chemistry*, University of Wisconsin, Madison, Wis.

C. A. NOWAK, *Director*, Nowak Chemical Laboratories, 516–17 Chemical Bldg., St. Louis, Mo.

JOHN M. ORT, *Biophysicist*, E. R. Squibb & Sons, 25 Columbia Heights, Brooklyn, N. Y.

HOWARD W. POST, *Assistant Professor of Chemistry*, University of Buffalo, Buffalo, N. Y.

LEON V. QUIGLEY, *Public Relations Counsel*, 730 Fifth Avenue, New York, N. Y.

L. C. RAIFORD, *Professor of Organic Chemistry*, University of Iowa, Iowa City, Iowa.

W. T. READ, *Dean*, School of Chemistry, Rutgers University, New Brunswick, N. J.

A. P. SACHS, *Consulting Chemist*, 90 West Street, New York, N. Y.

GEORGE SCHNEIDER, *Technical Assistant to President*, Celanese Corporation of America, 180 Madison Ave., New York, N. Y.

FOSTER D. SNELL, *Consulting Chemist*, 305 Washington Street, Brooklyn, N.Y.

JAMES N. TAYLOR, Chemical Division, Department of Commerce, Washington, D. C.

H. P. TREVITHICK, *Chief Chemist*, New York Produce Exchange, New York, N. Y.

FLORENCE E. WALL, *Research Writer, Technical Publicity*, 235 East 22nd Street, New York, N. Y.

M. G. WEBER, *Consulting Chemist*, 1502 Stark Ave., Columbus, Ga.

SAMUEL M. WEISBERG, *Industrial Research Fellow*, 1403 Eutaw Place, Baltimore, Md.

DAVID WESSON, *Technical Adviser*, 111 S. Mountain Avenue, Montclair, N. J.

THOMAS A. WRIGHT, *Secretary and Technical Director*, Lucius Pitkin, Inc., 47 Fulton Street, New York, N. Y.

Railroad Chemists Constantly Testing Boiler Scale Speed Up Work With Baker's Analyzed Reagents

"EVERY ⅛" of boiler scale steps up fuel requirements 12 to 18%," states one railroad authority. "Every pound of scale kept out of a boiler saves the railroad 13 cents" writes The American Railway Engineering Association.

With water varying in solids content at most every source of supply—no wonder corrosion of boilers and boiler tubes is considered one of the most difficult chemical problems of railroads today.

For the Analytical Chemist who has this problem to control, Baker's Analyzed Reagents are always welcome. Never, in your tests, do you have to cope with minimum and maximum limits of impurities. Instead, you know the exact analysis of each Baker Reagent—with purity so high that it meets or exceeds A.C.S. specifications.

Whether you test for Calcium, Magnesium, Sodium, Potassium, Silica, Iron or Aluminum there is always a pivotal Baker Analyzed Reagent to quickly and accurately determine what chemical treatment is required for water to keep boiler scale to the minimum.

Because of minimal impurities C. P. Baker's Analyzed Ammonium Phosphate Secondary is the pivotal reagent for the determination of magnesium. Note the exact analysis on the label.

Over 60 of the leading Chemical Jobbers proudly stock and sell Baker's Analyzed Chemicals and Acids, your assurance of prompt deliveries and unvarying quality.

J. T. BAKER CHEMICAL CO.
PHILLIPSBURG, NEW JERSEY
New York, Philadelphia, Chicago

SPECIFY AND INSIST UPON

"Baker's Analyzed"

Proposed Code of Fair Competition for the Chemistry Profession[1]

Submitted by The American Institute of Chemists, Inc.

TO EFFECTUATE the policy of Title I of the National Industrial Recovery Act, the following provisions are established as a Code for chemists:

ARTICLE I

Definitions

(*a*) The term "President" as used herein means the President of the United States.

(*b*) The term "Administrator" as used herein means the duly appointed representative of the President to administer the National Industrial Recovery Act.

(*c*) The term "chemist" as used herein shall be construed to include those actively engaged in the profession of chemistry as herein defined and designated, and employed in the following and application of chemical processes.

(*d*) The term "chemical processes" as used herein means any and all activities performed by a chemist involving chemical reactions, including both original research and the application of known reactions, whether the same be performed wholly, or in part, within a laboratory, place of manufacture, or elsewhere.

(*e*) The term "labor" as used herein means human capacity for service.

(*f*) The term "Institute" as used herein means The American Institute of Chemists, a non-profit-sharing corporation organized under and conducted under the laws of the State of New York. The American Institute of Chemists is an organization of American chemists

[1] The Code for the Chemistry Profession in its present form merely reflects the proposal of the above-mentioned profession, and none of the provisions contained therein are to be regarded as having received the approval of the National Recovery Administration as applying to this profession.

having for its object the advancement of the profession of chemistry in America. To this end it maintains a code of principles of professional conduct which should merit public esteem and justify confidence in the integrity of the chemist. It has established, and maintains a standard of proficiency of such excellence as to insure competent and efficient service. It insists on an adequate basic training for the profession, strives to enhance the prestige and distinction of the profession of chemistry, seeks to improve the economic status of the profession, and cooperates with all agencies serving chemistry to make the profession of chemistry a powerful factor in the advancement of intellectual and material progress in America. A copy of the Constitution and By-laws of said corporation is attached hereto, and marked "Appendix A."

(g) The term "effective date" as used herein means the tenth day after this Code has been approved by the President of the United States.

ARTICLE II

Protection and Amortization of the Chemist's Investment

It is the purpose of this code to establish the fact that a general recognition of the fundamental principle, enunciated in both the Clayton Act and Versailles Treaty to the effect that labor—human capacity for service—is not a commodity or article of commerce, is essential to future prosperity and should be a basic element of the provisions to aid national economic recovery. In particular this code is concerned with the welfare of chemists, but its basic principle is applicable to all labor, meaning human capacity for service. It is recognized that such a code must lay down broad principles which are of general application and which should supplement the codes already in existence. That there are no codes required for professional people under the present plans of the NRA is assumed, but it is hoped that the essentials of this code will prove sufficiently constructive to justify its consideration in the formulation of national plans for the complete economic recovery of this country.

The lot of the unemployed and destitute chemist during the past few years is but an exaggerated case of a normal expectancy of the economic system, which compels a large portion of those who serve humanity faithfully and arduously to become dependent on others for support when retired from service. This state of affairs is lamentable and demands correction. Its correction is fundamental to the future security of the social order. It is essential to the success of the New Deal.

The first requisite to a satisfactory solution of the economic debacle

resulting from business depression is the establishment by the Federal Government of the principle that human capacity for service, when put to work in all enterprises, must be treated as an investment, the protection of which shall be included in the cost of goods and service. As an investment it is parallel in importance with material investment. Man puts his capacity for service to use in the attempt to satisfy human needs. Money represents his past service. It is the medium that makes it possible for him to exchange past services for materials needed to make his present service effective. There is no essential difference between human and material investments, and they should receive similar treatment in a satisfactory system of economics. Human capacity for service is then a real asset, and, when put to work for society, should be regarded as an investment, made possible at considerable cost, not only in money, but also in the intangibles: suffering anxiety, disappointment, and sacrifice.

Every enterprise in which the service of the chemist is essential must be required to set up factors of cost acceptable to the Federal Government for the protection and amortization of the human investment involved in the chemist's work. In the first place, the investment must be safeguarded against the hazards of sudden destruction as is the case for the buildings and equipment now protected by insurance and the cost borne by the goods produced or by the service rendered. The amount of the investment is measured by the salary paid, this being comparable in every respect to the interest paid on invested capital. This is all that salary can be: the amount permitted by the Law of Supply and Demand for the use of the human investment. Also adequate factors of cost should be set up to cover the obsolescence and depreciation of the human investment. Buildings and equipment become obsolete, and so do men and women; both are subject to temporary and permanent obsolescence. Unemployment is human obsolescence. The more highly specialized the service, the greater is the tendency to obsolescence. Finally, in the cost of the product of labor there must be a factor to cover depreciation. The life service of a human being can be estimated with a fair degree of accuracy. Buildings and machines wear out; so do men and women who make it possible for these to be of service. The money for the protection and amortization of the chemist's human investment, collected in the price of goods and service, belongs to him and should be paid when received by his employer to properly constituted insurance companies, to purchase the desired insurance and annuities; that paid for his obsolescence should purchase unemployment insurance and that for

his depreciation retirement income. Thus, the chemist's earning power will be conserved and poverty in his old age made impossible.

The economic principle that human capacity for service or labor is a commodity reduces the average man to a state of serfdom in which he is unable to earn enough to protect and amortize the human investment. As a result, society is in a perpetual state of human bankruptcy in which the majority of mankind is left stranded with swollen service-inventories which cannot be liquidated. The principle was true only for slave labor. Free labor or human capacity for service has not the chief attributes of a commodity. The utility of a commodity is of limited scope; human capacity for service has unlimited possibilities. The purchaser of a commodity acquires full property rights, including the right to destroy it without restrictions or molestation by the seller. Complete ownership of human capacity for service cannot be acquired. A commodity has no control over its capacity to serve and no choice in determining its use. It has no responsibility for the kind of service it is made to perform. Human capacity for service retains control over its output both as to quality and quantity. It must furnish both the commodities and the means of making them of maximum usefulness in the work of advancing civilization. The commodity cannot withdraw itself from service; man can.

Without human capacity for service, society could have neither necessities nor luxuries, regardless of the available material capacity to provide them. The obligation to pay for the protection and amortization of the human investment is then the consumer's and not the producer's. We have been slow in learning this obvious lesson. Instead, we have tried to force and persuade the producer to assume the obligation. Where successful, a system of paternalism resulted, which was bad for society and ineffective in the protection it offered labor.

No system of protection of the human investment is feasible that is not common to all competitors. To be of general good, it must be made obligatory. This can be done only by the Federal Government. It should be a necessary requirement, supplementing the regulations of all the codes under the NRA and the regulation enforced for all enterprises not now coming under the provisions of the NRA.

This plan should successfully eliminate the idea that labor and capital must necessarily be opposite forces in society, and substitute for it the idea that the two must cooperate to make realizable their fullest capacities for service. It should put an effective brake on needless expansion, brainless competition, and costly inefficiencies due to misunderstandings between labor and capital and the uncertainties of

labor. It wipes out the distinction between capital and labor, raises labor to the status of an investment, and thus unites two forces, which working in harmony should have unlimited possibilities for future accomplishments. It should be preferable to any other plan that places the obligation on the consumer, such as Federal old-age pensions and insurance paid for out of revenue derived from income taxes. In the first place it is paid for by the person obtaining the goods and service at the time and not at some later date, as a tax unrelated to any tangible goods or obligation. In the second place, it must be paid by all; no evasions would be possible. This plan should be effective in banishing poverty, reducing misery and suffering, minimizing the dreaded calamity of unemployment, and in establishing the dignity of human service.

ARTICLE III

Professional Nature of Chemical Employment

While chemistry is unquestionably a profession and chemists are undoubtedly professionals, the material conditions surrounding the profession of chemistry are such that by far the greatest number of chemists are actually employees upon salaries, and hence are subject to the same general conditions of employment as other employees. Chemists, therefore, are equally entitled to protection under the National Industrial Recovery Act as are other employees.

ARTICLE IV

Hours of Labor

Recognizing that the services performed by professionals are of an entirely different character from those performed by non-professional employees, and that their obligations to their profession and to their employers would frequently be violated by a fixed limitation to their hours of labor, no maximum hours of labor for chemists are set forth herein.

ARTICLE V

Salaries

(*a*) CHEMIST: a person qualified by education and experience to ascertain the facts of chemistry and interpret them so as to benefit humanity and accelerate progress. Since the practice of chemistry involves a wide range of activities and responsibilities, it is essential that the chemist should have a broad, fundamental training. Gener-

ally, this is best secured through formal courses of instruction requiring four to six years of collegiate and post-graduate study at accredited colleges and universities. Besides, he must have four to six years of experience, giving him a total of ten years' training and experience. While the above requirements qualify a person to demonstrate his proficiency as a chemist, the equivalent knowledge and proficiency acquired by other means, when demonstrated, is entitled to full recognition. He must be capable of meeting the qualifications for fellowship in The American Institute of Chemists.

(*b*) ASSOCIATE CHEMIST: a person who can qualify under the training required for the chemist but whose training and experience together make but eight years. He must be capable of meeting requirements for Associates in The American Institute of Chemists.

(*c*) ASSISTANT CHEMIST: a person having four years of collegiate training in chemistry corresponding to the educational requirements for Junior members of The American Institute of Chemists and two years experience in the application of the science; or four years of collegiate training and two years of graduate study in chemistry.

(*d*) JUNIOR CHEMIST: a person who has had four years of collegiate training equal to that prescribed by The American Institute of Chemists.

The minimum salary in the respective grades shall be not less than:

(*a*)	Chemist	$350 per month
(*b*)	Associate Chemist	250 per month
(*c*)	Assistant Chemist	175 per month
(*d*)	Junior Chemist	100 per month

ARTICLE VI

Insurance, Obsolescence, and Depreciation

The insurance, obsolescence, and depreciation in each class shall be that determined from the proper actuary tables of insurance companies as adequate to give the protection required. The payments shall be automatically made each month by the employer to the organization designated by the chemist and approved by the Institute. The payments shall be required of all employers of chemists.

ARTICLE VII

Child Labor

On and after the effective date, no employer of chemists shall em-

ploy any person under the age of sixteen years to perform chemical operations; provided, however, that where a State law provides a higher minimum age, no person below the age specified by such State law shall be employed within that State to perform chemical operations.

ARTICLE VIII

Administration

The Institute is hereby appointed an agency:

(*a*) To collect from chemists all data and statistics that may be called for under this code.

(*b*) To represent chemists in conferring with the Administrator with respect to the application of this Code and of said Act, and any regulations issued thereunder; to receive complaints, and if possible adjust them; and to coordinate the administration of this Code with such codes, if any, as may affect any subdivision of chemists, with a view to providing joint and harmonious action upon all matters of common interest, and to receive any proposals for supplementary provisions or amendments of this Code and transmit it to the Administrator provided, however, that in regard to all matters mentioned in this paragraph (*b*) said Institute shall not have the power in any way to bind chemists or any subdivision thereof.

(*c*) The duties of the Institute above enumerated shall be performed by its Council. The President may name three representatives who shall have the right to attend all meetings of said Council dealing with questions concerning the administration of this code, but such representatives shall have no vote.

ARTICLE IX

Scope of Code

This Code shall apply to all chemists irrespective of other codes adopted under the National Industrial Recovery Act.

ARTICLE X

Employee Organization and Bargaining

(*a*) Chemists shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of chemists,

or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

(*b*) No chemist and no one seeking employment as a chemist shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing.

(*c*) Employers of chemists shall comply with the minimum rates of pay, and other conditions of employment approved or prescribed by the President.

ARTICLE XI

Constitutional Rights

Nothing in this Code shall be interpreted in such manner as to impair in any particular the constitutional rights of the chemist and employer to bargain individually or collectively as may be mutually satisfactory to them, and nothing in this Code shall prevent the selection, retention, or advancement of any chemist on the basis of his individual merit without regard to his affiliation with any labor or employee organization.

ARTICLE XII

Modification of Code

The President may from time to time cancel or modify any order, approval, license, rule, or regulation issued under Title I of the National Recovery Act.

ARTICLE XIII

Administration

Supplementary provisions or amendments to this Code, or additional codes or fair-trade practice rules applicable to subdivisions of chemists, may from time to time be submitted by the agency designated herein, or by an agency named by any subdivision, for the approval of the President. Notwithstanding any provisions of Article VI, or any authority conferred thereby, any subdivision shall have the right to and shall be entitled to submit in its own behalf direct to the National Recovery Administration, and to administer such supplementary provisions or amendments to this Code or additional codes or fair-trade practice rules.

ARTICLE XIV

Expiration of Code

The provisions of this Code shall expire on December 31, 1933, or on the earliest date prior thereto on which the President shall by proclamation, or the Congress shall by joint resolution, declare that the emergency recognized by Title I of the National Industrial Recovery Act has ended.

Cooperation with the NRA

FOLLOWING the work of the New York Chapter committee (Chairman T. A. Wright, Chandler D. Ingersoll, Lloyd Van Doren, and Florence E. Wall) which during the summer studied how The American Institute of Chemists could cooperate with the NRA, the Chapter recommended to the National Council that it offer the services of the Council to the President and the Recovery Administration in an advisory capacity, whenever questions should arise in the formulation and prosecution of any code for any industry wherein the professional interests or economic status of employed chemists may be at stake.

These resolutions were:

WHEREAS: The American Institute of Chemists is the only organization in the country that is primarily interested in the personal aspects of the profession of chemistry, rather than in the technical aspects of the science of chemistry; and

WHEREAS: The principal objective of The American Institute of Chemists is to obtain proper recognition, as valuable public servants, for those employed as chemists, irrespective of the fields of work in which they may utilize their chemical knowledge and training; and

WHEREAS: Codes are daily being submitted to the NRA that may have insufficient definition and classification of employees, wherein conflicting interests and, even more dangerous, discriminatory exemptions are liable to jeopardize the position of employed chemists and subject them to exploitation; and

WHEREAS: The American Institute of Chemists, having devoted several years to a study of the qualifications of chemists and problems relating to their employment, has accumulated a vast amount of information that should be valuable to the NRA; therefore

Be It Resolved that the NRA be earnestly requested to consider the National Council of The American Institute of Chemists as its advisor and interpreter in the formulation and prosecution of any code in any industry wherein the professional interests and economic status of employed chemists are at stake.

Respectfully submitted,

THE AMERICAN INSTITUTE OF CHEMISTS

By Henry G. Knight, *President*, Howard S. Neiman, *Secretary*.

The NRA acknowledged this message with thanks, but pointed out that since the NRA program is designed to benefit industry and the codes deal principally with minimum wages, it did not seem practical to try to single out the chemists for special consideration apart from other professional classes.

The realization is strong, however, that with the loose definitions and designation of various classes of workers as covered by the codes already published, a "professional man" is anyone who receives more than $35 a week, while due to continued bad economic conditions many professional trained chemists may actually be subject to the minimum-wage, maximum-hour rulings, and consequent exploitation.

The next step on the part of the Institute was the formulation and filing of the Code for Chemists; see page 325.

Cooperative Analysis

THERE was a time when the chemist in the textile plant jealously guarded many so-called secrets of his craft. Fortunately this old order is changing for the better, as is well illustrated by the cooperation of chemists throughout the textile industry in working together to standardize methods of analyzing sulphonated oil.

A few years ago the author ran a long series of comparative moisture-tests on sulphonated oil, using a few of the many methods then in use by various mills. One authority reported twenty-seven different methods. Naturally this caused much confusion, and results varied considerably.

In December, 1931, the author read a paper at the national convention of the American Association of Textile Chemists and Colorists in Boston, suggesting the formation of a committee to suggest uniform methods of analysis of this much used compound. The research committee of the association appointed a sub-committee to investigate the subject, and chose Mr. Ralph Hart, F.A.I.C., as chairman. His first report appears in the *American Dyestuff Reporter*, November 21, 1932.

In addition to these member-chemists of the AATCC, members of the American Leather Chemists' Association, members of the Sulphonated Oil Manufacturers' Association, and L. R. Gilbert of the U. S. Bureau of Standards have been working on the problem.

On the other side of the ocean chemists are also studying the subject, and it is hoped that eventually we can cooperate with them to establish universal methods for all the analytical tests on sulphonated oils. Thus cooperation is making the work of all chemists who deal with this substance much easier.—ALBERT H. GRIMSHAW

Codes and the Employee Chemist

By Benjamin Janer

The president of the Association of Municipal Chemists of the City of New York gives the point of view of one employee group.

WITHOUT stopping to undertake the laborious task of a statistical analysis of the chemists of the nation, I venture to state that no one conversant with the situation can seriously question that by far the most of us chemists are either employees or seeking employment. This salient fact cannot be too strongly stressed; and if we mean what we say in the declaration that the Institute is devoted to the economic interests of the chemist, we can no longer stay on the side lines. The empty flattery of being classified with the executives should not beguile us into inactivity. "Hours, wages, recognition." These are of vital concern to all employee chemists, and that means the large majority of Institute members. The employee chemist must school himself to think in those terms since they are basic to his economic interests.

For some months past codes have been pressed upon the Washington authorities. In many of these, chemists' interests are involved but the chemist is ignored. In others, he is not ignored but receives only passing mention along with a pat on the back in being grouped with "executives." In still others, the pat takes the form of a thump and we find a wage rate provided that should stir us out of our lethargy into active opposition. I refer, for example, to the code for the hardwood distillation industry recently approved by the President, in which the basic pay rate for the chemist is $14 per week. See also the jokers tucked away in the distilled spirits code; or note the thoroughly indefensible provisions of the code proposed for the commercial testing laboratories, an abstract of which appears in the November issue of THE CHEMIST.

As to pay, those promulgating that last document seem to be afraid that sixty cents an hour may prove to be too generous, and so they are careful to provide themselves with an excuse for cutting below even that shameful figure. That code also discloses an attempt to ensnare within its provisions employees in the various federal, state, and munici-

pal laboratories. We must note, too, the code proposed for the chemical industries, four times rejected and now in the process of its fifth revision.

OPPOSITION as has been registered on behalf of us chemists by the Federation of Architects, Engineers, Chemists, and Technicians, the membership of which includes a number of Institute Fellows and Associates. To date, the Federation has won for itself a recognized status at Washington through its participation in numerous hearings on codes, through its vigorous objection by oral argument and through the filing of ably constructed briefs in the fight against the various reprehensible clauses contained in codes that employer groups are attempting to foist on the Administration—and succeeding in far too many cases.

In addition, as a substitute for the codes it opposes, the Federation has drawn up its own code and has filed it with appropriate officials. This code calls for a basic pay rate ranging from $30 to $65 per week depending upon professional qualifications that closely parallel our own Institute membership requirements. It provides for a thirty-hour week, so essential if the New Deal is to mean anything toward the alleviation of the unemployment situation with all of its grim accompaniments; and it calls for employee representation on the various NRA administrative boards.

Unless we of the Institute effectively bend our efforts toward the frustration of the attempts to ram through the many iniquitous clauses contained in so many employer codes, tentative, proposed, or approved, we shall find our much vaunted professional status torn to shreds. We must vigorously sponsor a code that will assure the employee chemist equitable treatment. We must remember that as to wage rates the minimum has a way of becoming a maximum. We must get off the fence.

Unemployment Committee

By M. R. Bhagwat

Report from the Metropolitan area. New drive for funds. Program of fundamental research.

ABOUT 900 contributors have supplied the committee with $26,222.52. This sum, now nearly exhausted, was used in assisting about 250 needy families and in giving help to an additional 60 by "made-work" relief, food, or clothing. To date, 1060 qualified chemists and chemical engineers have registered. Of these, 309 have been placed in either temporary or permanent positions. In spite of all this, several hundred, together with their families, are in dire need.

A new drive for funds is being made this fall. In addition to letters of appeal sent to the 4700 chemists within fifty miles of New York, the following personal letter has been sent to the executives of chemical corporations by Mr. A. Cressy Morrison, chairman of the finance committee:

November 27, 1933.

Dear ————:

You of all others realize the success of your company leans heavily upon the chemical profession.

Since our inception, appeals for contributions for relief have been sent to about 4700 chemists within a radius of fifty miles from New York. Of these, 931 responded. Their contributions, together with a few donations, have given the Committee a total of $26,394.52 which has been practically expended. Our rent and furniture have been donated, and a large part of the management and office work has been done voluntarily. Details will be given cheerfully.

We now have 410 chemists and chemical engineers who are in need,

and some in desperate straits, as are their families. We are getting work for those who can be placed. We shall continue to furnish food, clothing, and moral support, and also limited funds in cases of acute distress.

No doubt your company has contributed to general relief funds. The chemist and chemical engineer, however, has not been the beneficiary of such funds which principally have gone to another stratum. Chemists cannot enter the union trades and are not fitted for ditch digging. The profession, therefore, constitutes a special class which must be taken care of. Our burden this year has been increased due to the discontinuance of the privately supported Emergency Work Bureau.

Assuming that a certain percentage of the chemists, chemical executives, and staff in your employ are willing to contribute $1.00 or more per month, would you match their contributions with an equal amount from your company?

In addressing you, we are anxious for your personal consideration. Your prompt decision will be deeply appreciated.

Yours very truly,
(Signed) A. CRESSY MORRISON,
Chairman, Finance Committee

The committee expects to continue this winter its activities in giving winter relief and other supplementary assistance, such as food, clothing, etc. Side by side with the campaign for funds, an attempt is being made to secure positions for unemployed chemists in their own lines without lowering the salary standard.

Through the courtesy of Mr. Charles F. Roth, vice-president of the International Exposition Company, a booth was secured at the Chemical Exposition. Equipment and other material were obtained free from various other sources.

An exhibit was arranged presenting the problems worked out by unemployed chemists under the fundamental research program of the committee. Under the direction of Professor Marston T. Bogert, crysene cancer-genic material was isolated from coal tar, and its properties were studied. Under Professor Colin G. Fink, properties of rotating cathodes have been investigated. A complete bibliography on talc was completed under the direction of Professor G. H. Brown at Rutgers. Some work was done on fractional distillation under Dr. L. T. Work at Columbia.

If sufficient funds are secured, the committee desires to continue its fundamental research program and take up such problems as the isotopes of hydrogen heavy water, air-pollution in New York, and stream pollution. Also, a study of the fundamental principles involved in marketing heavy chemicals will be carried out side by side with the energy survey being conducted at Columbia.

Technical Service Committee

By Howard Stoertz

Report of the Philadelphia relief and placement organization. Present policy of the committee.

PRACTICALLY all the funds raised a year ago by the Philadelphia Technical Service Committee for the relief of unemployed chemists and engineers have been expended. A new drive is therefore under way to raise $30,000. Many men are still in need of assistance, and the situation has been only slightly relieved.

On October 1, 1933, a total of 1944 men were registered, with 1009 of these records active. A total of 89 placements have been made since January 1, 1933. About 24 men are on the present relief list, but the relief list should not number over 40 men this winter. During the past winter men who were employed on useful work were allowed $15 per week. At the expiration of the fuel-using season, this was reduced to $12.25 per week.

During the past summer, realizing that funds were getting low, the committee went over the whole situation and formulated very definite conditions to govern the dispensing of funds for relief. This resulted in a considerable reduction in the number of men receiving assistance.

As a result of last year's experiences, it was decided that the placement service be operated for the season of 1933–34 with a permanent paid staff consisting of one supervisor and one stenographer. This staff is to confine its work to placement service. Relief activities are to be carried on by other individuals.

It is felt that the men who are registered and who benefit from the service should contribute something toward the cost. The amount fixed for this purpose is three-fourths of a week's salary, payable by the end of the second month's work; for temporary positions of six months or less, 3% of the total salary received, payable monthly. This fee is about the same as is charged for similar work conducted by other engineering societies and is about half the fee of commercial agencies.

IT WAS decided that money paid out for relief be in the form of loans, to be repaid later when the applicant is in a position to do so. The following conditions have been placed upon these loans:

Loans may be granted for agreed total amounts to take care of actual necessities for a period of three months or less, the amount of cash loan to be prorated to provide weekly instalments. A note payable to the order of the committee must be signed by the borrower, and on the note will be endorsed the date and amount of each prorated advance. Each note must carry an agreement to repay the total amount of the advance as promptly as possible after employment is secured.

The applicant's professional and social standing, and the amount of his cash resources, must be considered in determining the amount of any loan.

To prevent unnecessary sacrifice of property, an applicant's equity in real or personal property, or insurance, may be accepted as collateral for temporary loans.

Financial assistance, through either useful work or loans, will be extended for a definite period of three months or less, the length of time of the period to be agreed upon at the time help is granted. If at the end of three months, no employment or other financial assistance has been obtained, the case will be given further consideration in such manner as the committee may determine.

The committee, as a private relief agency, will attempt to assist only those individuals who need assistance temporarily. Cases which are shown upon investigation to be permanent relief cases will be referred to the proper public relief agency. Each applicant for assistance other than secured loans will be interviewed by a trained social worker, and a record will be made of the facts concerning his condition professionally, socially, and financially.

Definitions of professional standards for acceptance were also adopted, and a basis for judging the needs of families of different sizes was developed. This would give a family of four persons $10.50 per week.

The campaign for new funds is being actively pressed, about $13,000 having been pledged by November 23d. It is hoped that all of the employed professional men in the Philadelphia area will realize their responsibility and give generously.

Richard B. Mellon

Medalist of the Institute and one of founders of Mellon Institute of Industrial Research dies in Pittsburgh at 75.

RICHARD BEATTY MELLON, recipient with his brother Andrew of the medal of The American Institute of Chemists in 1931, died on December 1st at his home in Pittsburgh when a cold caught while inspecting the new Allegheny River Boulevard developed into pneumonia.

Mr. Mellon was born in Pittsburgh. After being educated in the city schools, he engaged in railroading, the lumber business, and other enterprises with his brother Andrew W. Mellon. He finally entered the banking house of T. Mellon & Sons, later incorporated as the Mellon National Bank. Chiefly through the activities of the two Mellon brothers the bank became the dominating factor in the development of manufacturing, mining, financial, and commercial projects in and about Pittsburgh.

Of the many Mellon philanthropies, the one of chief interest to chemists is the establishment of the Mellon Institute for Industrial Research, for which important contribution to chemical progress Richard B. Mellon and Andrew W. Mellon were awarded the medal of The American Institute of Chemists.

In a speech made at the time of the award, Dr. Lawrence V. Redman, then president-elect of the American Chemical Society, said:

> It is indeed flattering to the chemist that you should have determined to place the weight of your influence in the realm of scientific research.
>
> I remember with what enthusiasm Dr. Duncan told us you had determined to found and to aid with your thought and your time the great institution which today is known the world over as the Mellon Institute of Industrial Research. He recounted to us the process of argument with yourselves whereby you came to this decision. You argued that . . . new truth, especially new, useful, scientific truth, could only be good for the human race in the final outcome; and since the science of chemistry and applied science in general held out what appeared to be the greatest

> opportunity, you resolved to place part of your thought, time, and interest in encouraging the pursuit of new knowledge.
>
> The success of your undertaking is surely already outstripping the fondest of your dreams, and the end is not yet. It is the glory of creative science that each bit of new knowledge carries with it the creative germ of many more ideas, which become reality and fact as the growth continues. Whose imagination is hardy enough to predict the future as the increase of knowledge widens and strengthens civilization's foundation? . . .
>
> Your intention of supporting more and more pure science research in the greater Mellon Institute has aroused world-wide commendation; and it is your interest in helping to support these needs which makes every scientist honestly and without restraint admire you.

At the same medal presentation, Dr. Frederick E. Breithut, then president of The American Institute of Chemists, said:

> Today we honor two men who had the vision, the foresight, and the will to give chemical industrial research a tremendous impetus through the establishment of the Mellon Institute of Industrial Research; and this they did eighteen years ago when chemistry was regarded by most industrialists as a step-child rather than as a blood relation. Would that more men of means would follow their example! . . . The American chemical industry is the equal of any in the world today. With the establishment of institutes of industrial research in each state we could lead the world in chemical research in pure science.

The Mellon Institute, described as the "West Point of America's industrial system," was only one of the ways in which Mr. Mellon spent his money for the benefit of mankind. In addition to large contributions to Presbyterian and other charities, he and his brother Andrew assumed the cost of the Carnegie Institute's international exhibition of paintings in 1927.

Mr. Mellon received honorary degrees from the University of Pennsylvania and from St. Lawrence University.

Contracts

A symposium conducted by the Niagara Chapter, A.I.C. at its fifth regular meeting held at the Hotel Touraine, Buffalo, Friday, December 8, 1933.

THE question of contracts, or the question of the legality and the justice of contracts, is one which every industrial chemist has had to face at some time in his professional career. Many men have signed contracts without realizing their real meaning, many have signed them knowing their real meaning but preferring to sign rather than lose the chance of a job. To what extent is a company justified in binding its men by hard and fast rules and to what extent are the employees justified in demanding freedom of action, especially after leaving the employ of the contracting employer? These and kindred questions occupied the attention of the Niagara Chapter during its fifth regular meeting, with considerable profit to those concerned.

Charles F. Smith presented "A Proposed Standard Employment Contract for Chemists," by Dr. Lloyd van Doren, chairman of the legal committee, A.I.C. Most members of the institute have doubtless read this contract, but it might not be out of place to enumerate some of its high lights here. Paragraph 3 relating to the rights of a chemist to the results of his labors occasioned considerable comment. It seemed to be the usual, though not universal practice in this area, to patent in the name of the investigator, assigned to the employer. In Paragraph 5, restrictions are placed upon the field in which the chemist may work after leaving the employ of the company contracting. The chapter felt that the phrase "particular phase" should be rather loosely interpreted inasmuch as the contract specified he shall not engage in the "particular phase of the work connected with that upon which he has been engaged," for a period of one year after he leaves the company's employ.

It was felt that many companies might do well to lower the time limit in this type of clause to one year or omit it altogether; but this disclosed disagreement as to what constitutes a really valuable trade secret, and to what extent a chemist may legitimately go on using his

experience when employed by a new company. After all is said and done, much depends on the willingness of the chemist to play fair and the willingness of the employer to give the chemist a square deal.

Albert L. Hall presented a paper which was read in his absence by William R. Sheridan, outlining the phase of the subject which seemed of most importance to the consulting chemist. His contacts vary with the circumstances, comprising (1) requests for advice on the development of new ideas, (2) requests for help in the development of some new project, (3) and opportunities to conduct chemical analyses to ascertain causes of trouble.

But few written contracts are used between consulting chemist and client. Apparently the feeling of mutual confidence is much higher here, and this undoubtedly makes for more satisfactory relations between these two, as is evidenced by the fact that important points are often communicated to the consulting chemist with the request that he consider them confidential. When the consultant is engaged on a retainer basis, however, a contract is generally used. This type of client is often the firm of larger size, which wishes to have expert opinion always on tap or has some few points which it does not wish the employees to understand too thoroughly. Such a contract according to Mr. Hall, should cover the following points: "(1) the consultant will confine his services in this project to the client only and will not engage in like capacity for anyone else in the same line at the same time, (2) the client agrees to engage the consultant for a certain specified time (which is never less than a year) and at certain fees, (3) the trade secret or new features which are developed are the property of the client, but any experience gained by the consultant is the property of the consultant."

Most contracts as they appear today are rather one-sided in that they appear to deprive the worker of the benefit of his expression. But after all "the case rests with the chemistry profession as a whole; and the profession should show itself to be composed of members as upright and honest as men in any other profession."

Arthur J. Norton presented his views on industrial contracts from the standpoint of the manufacturing chemist. A contract is not necessary as regards patent rights and ownership of inventions, as state and national laws seem amply sufficient at the present time. All inventions made by a salaried employee whether done on the premises or

not belong to the employer. An hourly wage earner is entitled to his own inventions if he can show that they were done on his own time. It seems desirable for a chemist with specialized knowledge "particularly desired by his employer to insist on a term contract." The background of knowledge comes from the firm of course, but it might happen, that without a contract, the firm would decide to fire him as soon as his value with respect to a certain situation had disappeared.

Companies endure a long period at the outset of a man's career with that organization during which he is of practically no value, and it is only fair to the company that something be inserted in the contract to protect its interests—to keep the employee from running off to a competitor as soon as he has passed this period of learning. "On the other hand, restraint of practice of his profession is distinctly disadvantageous to the chemist as it tends to keep his salary low, to narrow the scope of his activity and to prevent true development of the chemist in industrial work." Mr. Norton quoted from a legal authority: "Contracts that tend unreasonably to restrain persons from engaging in any lawful business, profession or employment are contrary to public policy and void (1) because they tend to injure the parties making them by diminishing their means of livelihood, (2) because they deprive the public of the services of the parties on what is presumed to be the lines of their greatest usefulness, (3) because of their tendency to enhance prices and create monopolies. Yet, not all restraint is unlawful. A lawyer may legally sell his practice and agree not to practice it again in the same city."

In case there exists a restraint in the contract by which the employee agrees not to work for a competitor of the present employer for a certain length of time, there often exists another clause by which this employee is remunerated for the loss of earning power thus occasioned. Frankly, "neither side has much actual redress at law—the chemist cannot successfully sue the corporation and the corporation is undoubtedly at the mercy of unethical chemists." Mr. Norton believes that the answer lies in educational work tending to create better mutual confidence and understanding between chemist and employee.

Howard W. Post presented the side of the university faculty member. The outstanding differences between industrial and educational contracts seem to be the concept of tenure and the fact, or at least prevailing opinion, that while industrial contracts tend to protect the employer more than the employee, the reverse seems to be true in the educational field. Tenure should not be regarded as the ability of an

instructor or professor to hold on to his job until death merely because it is a job, but rather to provide him sufficient mental and material security so that he can advance the sum total of human knowledge by spending his time in research or at least such time as is not required for the exercise of his teaching duties.

Many college faculty members abuse this privilege, of course, but the remedy does not lie in curtailing this tenure of office but rather in more careful selection in the future of material for promotion. Most of the leading college presidents of the country seem to regard a contract as such as too binding and stifling and not in keeping with the traditional concept of academic freedom, accepting as just as legal a letter from the administrative officer to the faculty member. Statistics were presented to show that the longer a man served on the faculty of the modern college or university, the greater his chances of unlimited tenure. Here again the question resolves itself into one of trust between college and professor. Without that mutual confidence, standards cannot be maintained.

Arthur W. Burwell summarized the remarks in various ways. In the first place the employer should not try to bind his men too much or the latter will get the impression they are giving more than they receive. That sort of mental attitude always has a depressing effect not only on a man's mind but on the quality of his work as well. Most employers prefer to trust the men and if they do, the chances are those men will respond properly. Not only that but the average court will always decide against a company that it suspects of overreaching itself in this respect if any point comes to a test. The whole matter seems to depend in the last analysis on square and honorable dealing between the contracting parties.

HOWARD W. POST, *Secretary*

Pharmaceutical Research

By A. Richard Bliss, Jr.*

Need for research in pharmaceutics. Difficulty of obtaining clinical research on products.

THE objectives of a research laboratory in a company manufacturing medicinal products are five-fold: the discovery of entirely new products; the development of new medicinal specialties, which need not involve newly discovered products; the development of new medicinal products which may be sold ethically and legitimately direct to the laity; the improvement of old medicinal specialties and preparations already being manufactured; and the development of new processes of manufacture and improvement of present methods.

Many look upon a research laboratory as a venture which is a financial experiment—a gamble, a long-time investment. To a certain extent this description is true; but the gamble may be reduced and satisfactory results insured by a clear vision of the objects of research—with recognition that an obligation is being entered into which may not return large dividends for some time—and by the employment of a well-trained, experienced scientific staff, efficiently directed and equipped with adequate laboratories.

Good research men are invaluable; but of initial greater importance in the organization of a manufacturer's research laboratory is the director of research. Unless research work is directed into the proper channels, the potential value of scientific staff and equipment may be reduced to zero. The director should possess a comprehensive knowledge—a close familiarity with the entire commercial industry in which he is laboring; he should be acquainted with the ups-and-downs of

* Director of the research laboratories of the William A. Webster Company, Memphis, Tenn.

competing companies and with their products and activities; he should know physicians, dentists, and pharmacists and become familiar with their needs. Once the problem has been decided upon, he should be familiar with at least the general scientific methods of attack.

If the director of research is expected to meet all of these specifications, he cannot do all of the actual research work alone. Consequently, he should have one or more qualified assistants (the number and their special training being governed by the requirements), who have had the best possible training in chemistry, especially in physical chemistry and in organic chemistry. In the event animal experimentation is contemplated, then adequate training and experience in anatomy, physiology, and pharmacology and skill in experimental surgical technique are essential. In the cases of bacteriological and pathological problems the additional requirements are obvious. Some manufacturers maintain research laboratories manned and equipped for chemical work only, the pharmacological and bacteriological portions of certain problems being passed on to universities and hospitals.

CLINICAL collaboration is quite difficult to obtain and cannot be bought for a price. If the director of research has successfully established personal contacts with members of the medical and of the dental professions by associating with them in their scientific meetings and conventions and mingling with them socially, this problem is rendered somewhat less difficult. Further, these associations constitute the very best way for a director to become acquainted with the practical needs of physicians and dentists. One is amazed by the well-founded criticisms of therapeutic agents made by physicians and dentists during the course of informal conversation. Evidence of a willingness on the part of the director to collaborate with physicians and dentists in attempting to solve their own problems usually results in the finding of physicians and dentists who have adequate clinical material and who are anxious to assist in the search for agents which are more efficacious than those therapeutics now in use.

A manufacturer's research laboratory is usually established on a small scale, but, given an able director and well-trained assistants, success invariably follows, the work pays, and the research laboratory grows.

BY-PRODUCTS

Emergence

IT WOULD undoubtedly surprise a goodly number of our physical colleagues were one to advance the thesis that the revolutionary principle of indeterminancy recently introduced into the already leaky balloon of physics by Heisenberg had, in reality, long ago been advanced by certain learned biologists as the theoretical basis for the doctrines of emergent evolution. Yet, so long ago as the seventh decade of the last century Lewes advanced the idea of the sudden appearance of new and unpredictable qualities following the combination in a new pattern of well-recognized elements; and Morgan is quoted to the effect that the idea was previously held by J. S. Mill, which may mean that it germinated in the fertile if fanciful brain of Auguste Compte. For if one cannot predict the properties of a new combination of old elements all synthesis becomes a matter of uncertainty, which is precisely the conclusion to which the Heisenberg principle leads.

The teleological applications of these two statements of identical meaning have amusingly been antipodal. Emergent evolution was avidly seized by the mechanists as an unassailable and irrefutable fact wherewith might be dissolved such inconvenient obstacles in the path of materialistic biology as cellular organization, consciousness, and more perfect adaptation to the environment. It was a weapon of great utility for use against annoying vitalists, not to mention theologians, whom no self-respecting mechanist mentions with any degree of complacency.

But satisfaction with emergent evolution may have blinded the mechanists to the possibilities of Herr Heisenberg's contribution or, since it dealt with subcellular units and with such abstractions as velocities and positions, perhaps they considered it inapplicable to organic problems. The theologians, however, accepted it in stride and have been making devastating use of it to lay waste the physical foundations of all mechanical explanations. Here is a principle that appears to refute all of the heretics from Buffon down. Let us be humbly grateful my brothers.

If the principle of mechanical causality is to be abandoned by physical science, great will be the joy in the ranks of vitalists, holists, and Kantians generally. Meanwhile the chemist, who certainly has an inherent

interest in the matter, is considered only when the laws of chemistry are invoked to support the laws of physics in explanation of mechanistic biology.

It appears that the chemist is very much concerned when some emergent evolutionist adduces as evidence of his pet theory that the properties of sodium chloride cannot possibly be predicted from a knowledge of the properties of its constituent elements sodium and chlorine, or the properties of water from a knowledge of those of hydrogen and oxygen. Mindful of the ideal of physical chemistry to furnish a basis for predicting the properties of all conceivable compounds from the periodic table, and recalling Mendelejeff's success with three then undiscovered elements, the chemist must think that this thing has gone too far. He will probably not object very forcibly when the emergent evolutionist uses as an example that the meaning of a word cannot be predicted from the separate letters that compose it. After all that concerns only the rhetorician; and the testtuber need only smile, if he grasps the point. Perhaps he will smile anyway, the smile of the graduate student contemplating the profundities of the sophomore.

Dum Spiro Spero

IT WAS a very dignified professor from a very dignified university addressing a very dignified group at a very dignified scientific meeting. And the subject of his learned discourse was the spiro compounds. It was spiro this and spiro that. And it was all very formal and serious.

The Autocrat sitting with great dignity in the rear row was amused to reflect that an irrepressible young scamp named Baeyer who had discovered these compounds, contemplating their linked-ring structure, named the series for that contorted article of diet the pretzel. But, since this convoluted delicacy reveals in low company and is, therefore, not mentioned in the best circles, he slyly unearthed the Greek equivalent "spira" and adapted this to chemical nomenclature. And so the lowly pretzel is immortalized in the language if not in the spirit of science.

They Say

"SCIENCE, in its ultimate ideal, consists of a set of propositions arranged in a hierarchy, the lowest level of the hierarchy being concerned with particular facts, and the highest with some general law, governing everything in the universe."

"When a man tells you he knows the exact truth about anything, you are safe in inferring that he is an inexact man."

"It is an odd fact that subjective certainty is inversely proportional to objective certainty."

"The plain man thinks that matter is solid, but the physicist thinks it is a wave of probability undulating in nothingness." BERTRAND RUSSEL, "The Scientific Outlook."

"There is a grandeur of achievement in the delicate adjustment of thought to thought, which is independent of the mere blunt question of truth."—WHITEHEAD. —*The Autocratic Chemist*

Code for Chemicals

When atoms obey the NRA
And molecules sign a code,
We chemists will cheer as we quaff our beer
And travel a smoother road.

For the enol-shift will have short shrift
And dyes will all be fast
And ferments won't boil into fusel oil
And -ous will be -ous to the last.

Then the sixteen-ring will smell like spring
And roses—not halitosis—
While esters appear all crystal clear
And resins will show osmosis.

When no more messes clog filter presses
And ether won't form peroxide,
We'll loaf by the side of the ocean-tide
While bankers still breathe monoxide.

When atoms obey the NRA,
We'll dwell in a rich abode.
As our troubles wane, we'll drink champagne—
When molecules sign a code.

R. K. H.

BOOK REVIEWS

The Preparation and Prosecution of Patent Applications. By CHAS. W. RIVISE. *The Michie Company.* Charlottesville, Va. $7.00

The chemist in the pursuit of his profession will almost inevitably come into contact with patents in one or more of the following ways: as an applicant, as an expert for the defense or the plaintiff in an infringement suit, as an appraiser with a view to advising on the purchase, or in studying means to avoid the patent. In any of these contacts it is the first prerequisite to proper functioning that the chemist be able clearly to distinguish between the patent and the invention which it is supposed to define.

In the volume under review the definition of a patent and the detailed description of the means by which a patent is obtained, offer an excellent way for the chemist to acquire this necessary knowledge. Mr. Rivise has shown exceptional powers of analysis in treating his subject and has combined these with a style which is clear and a pleasure to read. His text, both in extensiveness and intensiveness leaves nothing to be desired. The reviewer takes pleasure in having found such a book and in recommending it to every chemist and to every patent attorney.

The fact that Mr. Rivise is a member of the A. I. C. reflects credit on him as well as on the Institute.

KARL M. HERSTEIN

A Short Manual of Systematical Qualitative Analysis by Means of Modern Drop Reactions. By C. J. VAN NIEUWENBURG and IR. G. DULFER. *D. B. Centen's Uitg. Maatschappij* (N. V. Amsterdam.-C.)

This text marks the beginning of a series which it is safe to predict will increase considerably in volume in the next few years. There have been a number of well-thought-out articles in various journals embodying the application of modern micro-reagents to systematic qualitative analysis. This book, however, is the first to appear between board covers.

As a first attempt in a new field it is entitled to a certain degree of lenity in critical judgment. We are assured by Prof. van Nieuwenburg that he has successfully used the material here presented, in three years of trial with hundreds of students.

Making such allowances as are required, there still remains an extreme paucity of description, particularly regarding details of technique. This, from a pedagogical point of view, would either require considerable maturity of training on the part of the students taking the course; or it would, contrary to our American practice, necessitate that the instructor devote his efforts to practical manipulation rather than to the customary extension of the theory of general chemistry.

In general the text utilizes the separations of classic qualitative analysis, and applies the micro-reagents only for purposes of identification of elements. This is the usual practice in the articles on this subject which have been published to date. The selection of tests has been made with some discrimination, and a short bibliography adds to the value of the book.

KARL M. HERSTEIN

INSTITUTE NOTES

OFFICERS

HENRY G. KNIGHT, *President*
Bureau of Chemistry and Soils
Washington, D. C.

M. L. CROSSLEY, *Vice-President*

HOWARD S. NEIMAN, *Secretary*
233 Broadway
New York City

D. P. MORGAN, *Treasurer*

COUNCILORS

Past Presidents	1934	1935	1936
HORACE G. BYERS	L. V. REDMAN	D. D. JACKSON	FRANK G. BREYER
M. L. CROSSLEY	FOSTER D. SNELL	FREDERICK KENNEY	HERBERT R. MOODY
TREAT B. JOHNSON	FREDERICK W. ZONS	A. P. SACHS	FLORENCE E. WALL
FREDERICK E. BREITHUT			

CHAPTER REPRESENTATIVES

Philadelphia	*New York*	*Washington*	*Niagara*
W. T. TAGGART	W. C. MACTAVISH	A. L. MEHRING	ARTHUR W. BURWELL

National Council

The one-hundred and sixth meeting of the Council of The American Institute of Chemists was held at The Chemists' Club on Thursday, November 23, 1933, with President Henry G. Knight presiding.

The following councilors and officers were present: Messrs. Breyer, Crossley, Kenney, Knight, Moody, Morgan, Neiman, Taggart, Zons, and Miss Wall.

At the request of the Federation of Architects, Engineers, Chemists, and Technicians, their representatives, Mr. J. Jay, Mr. Benjamin Janer, and Mr. Mordecai Margolin, appeared before the councilors and described their proposed code, which had been submitted to the National Recovery Administration, stressing particularly their opinion relative to maximum hours of labor and minimum salaries, and the right for collective bargaining.

They respectfully suggested that The American Institute of Chemists endorse the code presented by the Federation, and expressed an earnest desire to cooperate with the Institute in every possible way in the preparation and adoption of a suitable and satisfactory code for chemists.

Code for Chemists:

A copy of the Institute Committee's proposed code for chemists having been sent to each member of the Council, the suggested code was thoroughly discussed section by section, and amendments made thereto.

Upon motion made and seconded, the code as amended was adopted sub-

ject to such minor modifications as might be made by the Committee.

Upon motion made and seconded, it was

Resolved, to present this code to the National Recovery Administration, accompanied by a letter signed by the President and Secretary; and that the President of the Institute present the code personally and request an audience relative thereto.

Miss Wall referred to the 14th Exposition of Chemical Industries, to be held during the week of December 4th to 9th, and it was

Resolved, that the Institute have a booth at the Exposition. Miss Wall's offer to arrange the details was accepted with thanks.

The resignation of Dr. Allen Rogers as councilor was accepted with regret.

Upon motion made and seconded, Dr. Foster D. Snell was appointed a councilor to fill the unexpired term of Dr. Allen Rogers, resigned.

The question of advertising in THE CHEMIST was discussed at length, and upon motion made and seconded, Miss Wall was appointed a Committee of one to take managing charge of this advertising.

The Secretary reported that he had received advices from the New York Chapter and the Washington Chapter of the appointment of the following committees on new members:

Washington Chapter—D. F. J. Lynch, *Chairman*, G. W. McBurney, J. F. Couch.

New York Chapter—Karl M. Herstein, *Chairman*, F. D. Snell, L. V. Bass.

The Secretary reported that he had received a progress report from the Committee on Constitutional Revision in which certain changes in the Constitution were suggested. The Secretary stated that he would send a copy of these suggested changes to each member of the Council for their consideration, action to be taken at the next meeting of the Council.

HOWARD S. NEIMAN, *Secretary*

Niagara Chapter

The fifth regular meeting of the Niagara Chapter was called to order by Chairman William J. Cotton at the Hotel Touraine at 8:00 P. M., Friday, December 8th. The meeting had been preceded by a dinner at 6:30. Present: Members Burwell, Cartledge, Cotton, Hall, Norton, Perkins, Post, W. R. Sheridan, C. F. Smith, and Taylor; and as guests, Dr. William L. Hyden of the duPont Cellophane, Dr. David F. Smith of the University of Buffalo, Mr. Manley Ross of the Roessler and Hasslacher Division of the duPont organization, Mr. Robert McMullin of the Mathieson Alkali Works, and Dr. Frank Hartman of the University of Buffalo.

The chairman extended an official welcome to the guests, stating the aims of the organization.

The secretary read a letter from John F. Williams expressing his appreciation of the letter of regret sent him on his transfer to New York City.

The Secretary read the minutes of the fourth regular meeting.

Reports of committee chairmen were read:

C. F. Smith for the Professional Ethics Committee stated that his committee was cooperating with the program of the fifth meeting.

G. H. Cartledge for the Committee on Professional Education reported progress in the matter of obtaining lectures in chemistry for the city and vicinity in the

near future. His committee is cooperating with the libraries of Buffalo in a survey of chemical literature available, and its cataloging. Dr. Cartledge presented a resolution embodying provisions for setting up an annual award to an outstanding senior student in chemistry. Moved by Dr. Cartledge, seconded by the secretary, that the resolution be accepted. Carried unanimously.

M. C. Taylor for the Committee on Public Relations reported he would give his attention to unemployment, asking cooperation from the membership, also that his committee would take up a study of licensing. Expressions of opinion were invited. The chairman stated that two bills would shortly be introduced in the legislature with regard to the licensing of chemists, and the matter should be discussed at length at the next meeting of the chapter.

A. J. Norton for the Publicity Committee outlined plans for the year substantially the same as published in the minutes of the last meeting of the executive committee.

W. R. Sheridan reported for the Membership Committee stating again the methods for increasing the membership of the chapter—inviting outstanding chemists to attend the regular meetings but not organizing any high-powered campaign for members at any time.

The program of the evening centered in the general topic of "Contracts." Fifteen-minute talks were presented by C. F. Smith, W. R. Sheridan (for A. L. Hall), A. J. Norton, H. W. Post, and A. W. Burwell; and these will be found reported in THE CHEMIST.

After these five contributions, the others present participated in the discussion.

The February meeting will be held at the Red Coach Inn, Niagara Falls.

Adjourned, 10:30 P. M.

H. W. POST, *Secretary*

New Members

The following members were elected at the November meeting of the National Council:

FELLOWS

JAMES H. HIBBEN, *Consulting Physical Chemist*, 5420 39th Street, N. W., Washington, D. C.

ROY HERMAN KIENLE, *Research Chemist*, The Calco Chemical Co., Inc., Bound Brook, N. J.

ASSOCIATE

FRANK JOSEPH BROGAN, *Professor*, Fordham College, New York, N. Y.

JUNIOR

CECIL KING HARRIS, *Assistant Chemist*, Nevada Agricultural Experiment Station, Reno, Nevada.

STUDENT

JOHN AUGUST RIEGER, *Laboratory Assistant*, American Sugar Refining Company, King Highway East, Baltimore, Md.

Raised from Associates to Fellows:

LLOYD W. DAVIS

HUGO ZAHND

NEWS

The following members of the Washington Chapter of The American Institute of Chemists have been elected officers of the Washington Chemical Society: secretary, **O. E. May;** treasurer, **A. R. Merz;** councilor, **H. G. Knight;** and managers, **J. H. Hibben** and **J. F. Couch.**

Henry G. Knight, F.A.I.C., has been elected an honorary member of The

Chemical, Metallurgical & Mining Society of South Africa.

Alexander Silverman, F.A.I.C., head of the department of chemistry at Pitt, addressed the Rhode Island Section, A. C. S., on November 9th on "Glass: Today and Tomorrow." He delivered the same lecture next day in Boston before the Northeastern Section.

On December 12th Dr. Silverman addressed the Pittsburgh Section of The American Ceramic Society on "Art: A Factor in Glassmaking."

H. O. Moraw, F.A.I.C., formerly in the Chemical Division of the Department of Commerce, is now employed in the Agricultural Adjustment Administration.

James Wright Lawrie has resigned his position as director of research for the A. O. Smith Corporation to accept an appointment with the Schlitz Brewing Company.

A. L. Mehring, F.A.I.C., became a grandfather on November 15th. Frank Breyer is no longer the only member of the Institute to be a grandfather at 40.

William G. Beckers, F.A.I.C., has been appointed a member of the Gold Cup Contest Committee in charge of the speedboat races to be held next August on Lake George.

R. S. Perkins, F.A.I.C., has been elected president of the Buffalo Chemists' Club.

D. H. Killeffer is the author of an article on "Plant Equipment from Synthetic Resin" *in Industrial and Engineering Chemistry* for November.

The following Institute members have been elected to offices in the Western New York Section, A. C. S.: member executive committee, **G. H. Cartledge;** vice-chairman, **W. J. Cotton;** councilor, **H. W. Post.**

Children's Science Fair

At the Children's Science Fair, held at the Museum of Natural History by the American Institute to encourage the study of science in secondary schools, physics led all the other exhibits with 115 entries. Second was plant and animal life with 83 entries; third was biology with 82. Other popular subjects were industries, with 73 entries, and health, with 32.

Philip P. Gray, F.A.I.C., has resigned his position as director of the chemistry department of the Pease Laboratories to accept a similar position with the Wallerstein Laboratories, 171 Madison Avenue, New York.

Charles H. Herty, F.A.I.C., has been appointed a deputy administrator un-

der the NRA. He is assigned to Division 3, in charge of codes for the chemical industries.

Foster D. Snell, F.A.I.C., had a booth at the Chemical Exposition which presented some of the problems that make up the daily life of the consulting chemist.

Florence E. Wall, F.A.I.C., addressed the Senate Committee during the recent hearing on the Tugwell Bill, which is designed to bring cosmetics under the Food and Drug Administration.

James A. Yates, F.A.I.C., head of the department of chemistry and physics at Kansas State Teachers' College, died November 12th, aged 68. He had been a member of the department since 1907.

Born in Kentucky, Dr. Yates did both his undergraduate and graduate work at the University of Kentucky. From 1897 to 1907 he was in charge of the science department of Ottawa University, Ottawa, Kansas.

Dr. Yates has been a member of the Institute since 1923. He was a contributing editor of THE CHEMIST.

Publications by Members

G. H. Cartledge and T. G. Djang: "The Catalysis of Eder's Reaction by Cobalt Compounds." *J.A.C.S.*, **55,** 3214.

G. H. Cartledge and S. L. Goldheim: "Complex Compounds in Eder's Solution." *J.A.C.S.*, **55,** 3583.

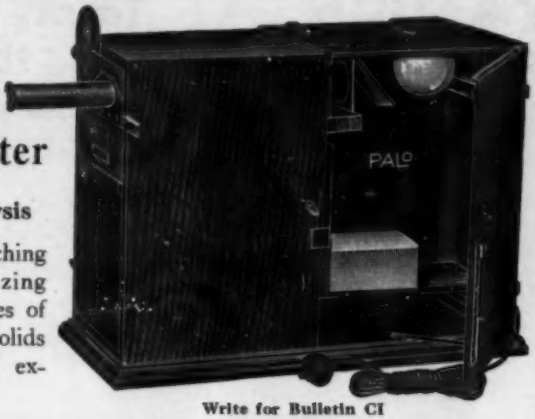
George Barsky: "Resin Developments." *Plastic Products,* December.

H. W. Post and E. R. Erickson: "Radical Interchange on the Part of Certain Alkyl Orthoformates." *J.A.C.S.*, **55,** 3851.

H. W. Post: "The Reaction Between Aliphatic Orthoformates and Acetone." *J.A.C.S.*, **55,** 4176.

Ives Tint Photometer
for
Color Analysis

Used for matching or standardizing all color values of liquids and solids by numerical expressions.



Write for Bulletin CI

PALO-MYERS INC.
Apparatus for Industrial and Laboratory Use
81 Reade St. **New York, N. Y.**

Universal Stopcock Plug and Bottle Stopper Remover

See Figure 1 in the article by Harold W. Bailey, Bureau of Standards, Washington, D. C., page 324 of Analytical Edition, Journal of Industrial and Engineering Chemistry, July 15, 1932; also article by Charles Wirth III, Research and Development Laboratories, Universal Oil Products Company, Riverside, Ill., figure 1, page 217, Analytical Edition, Journal of Industrial and Engineering Chemistry, May 15, 1933.

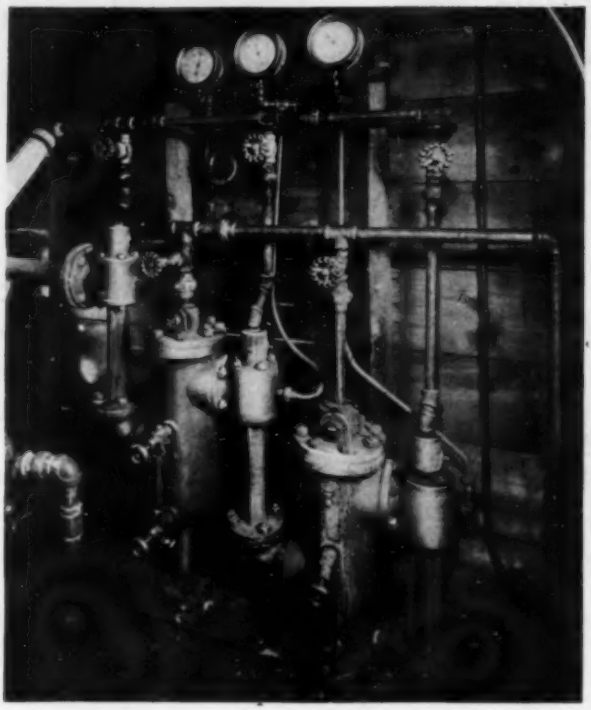
The Universal Stopcock Plug Remover accommodates stopcocks of any size without recourse to fixed spacers, collars, etc. It is quickly adaptable and pressure is directly applied. By means of two special attachments, it is ideal for the removal of "frozen" stoppers from reagent bottles.

Write for Bulletin No. 510

EIMER & AMEND
Est. 1851 **Inc. 1897**
Headquarters for Laboratory Apparatus and Chemical Reagents
Third Ave., 18th to 19th Street **New York, N. Y.**

VACUUM AT 1mm. Abs.!

WITH EQUIPMENT AS SIMPLE AS PIPE FITTINGS



High vacuum in the range of 1 or 2 mm. abs. has been limited mostly to laboratory work. Now the improved efficiency of Croll-Reynolds Steam Jet Evactors makes it practical and economical for many large industrial processing units and opens up opportunities for technical men to make vast improvements in a variety of commercial products and manufacturing processes. The vacuum equipment itself is simple and dependable involving absolutely no moving parts.

CROLL-REYNOLDS CO., Inc.

17 John St., New York **Phone Cortlandt 7-2793**

Other Croll-Reynolds products include heat exchangers, condensers, steel plate fabrication, castings, scrubbers, and special equipment.